

Public Utility Commission of Texas

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May 28, 1996

Office of the Secretary
Federal Communications Commission
1919 M. Street, N.W., Room 222
Washington, D.C. 20554

RE: CC Docket No. 96-98 (FCC 96-182)
In the Matter of Implementation of the
Local Competition Provisions in the
Telecommunications Act of 1996

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To the Secretary:

Enclosed for filing with the Commission are an original plus 16 copies of the Reply Comments of the Public Utility Commission of Texas (PUCT) in the above-captioned matter. By a copy of this transmittal, we are also providing an electronic copy of the filing as requested.

Please acknowledge receipt by affixing an appropriate notation on the duplicate copy of this letter furnished herewith for that purpose and returning this copy to me in the enclosed, self-addressed envelope.

Sincerely,

Vicki Oswalt
Director, Office of Policy Development

cc: International Transcription Services, Inc.
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In the Matter of

**Implementation of the Local Competition
Provisions in the Telecommunications Act
of 1996**

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CC Docket No. 96-98

**REPLY COMMENTS OF THE
PUBLIC UTILITY COMMISSION OF TEXAS
ON LONG RUN INCREMENTAL COSTING
AND PRICING OF LEC SERVICES**

**Pat Wood, III, Chairman
Robert W. Gee, Commissioner
Judy Walsh, Commissioner**

May 28, 1996

EXECUTIVE SUMMARY

The Public Utility Commission of Texas (PUCT) has learned, from its experience implementing a comprehensive long run incremental cost (LRIC) rule, that this type of costing is complex and that the implementation of any LRIC standard will inevitably vary across states. The PUCT believes that the FCC should endorse LRIC as the appropriate cost standard, but should not attempt to determine specific LRIC methodology. Also, the FCC should not seek to impose a generic pricing standard for local exchange carrier (LEC) services.

Even with a set of standard costing principles between states, there are many factors that will affect the outcome of cost studies. Between states, these factors will result in the calculation of different LRICs for the same service and produce different magnitudes of common costs as a proportion of total LEC costs. Because the calculation of LRIC and the magnitude of common costs as a proportion of total LEC costs is subject to such variation, a specific LRIC-plus-percent pricing standard could have different cost recovery implications in the different states.

The complexities surrounding the costing and pricing of services provided by a multiproduct firm that supplies monopoly and competitive products are not conducive to a LRIC-plus-percent pricing method or simple allocations of common costs to services and groups of services. Due to these complexities, state commissions are best equipped to make costing methodology and pricing determinations on a case-by-case basis in their respective states.

**Before the
Federal Communications Commission
Washington, D.C. 20554**

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ON LONG RUN INCREMENTAL COSTING
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**REPLY COMMENTS OF THE
PUBLIC UTILITY COMMISSION OF TEXAS
ON LONG RUN INCREMENTAL COSTING
AND PRICING OF LEC SERVICES**

I. Introduction

1. The Public Utility Commission of Texas (PUCT), having been given general regulatory authority over public utilities within our jurisdiction in Texas, hereby submits these Reply Comments on long run incremental costing and pricing of local exchange carrier (LEC) services. These reply comments pertain to the costing and pricing issues contained within the Notice of Proposed Rulemaking (Notice) adopted on April 19, 1996 by the Federal Communications Commission (FCC).¹ Many of the parties filing comments in this proceeding have expressed differing opinions with regard to the relationship between the costing and pricing of incumbent LEC (ILEC) services and the successful introduction of competition into the local exchange telecommunications market. (For example, whereas MCI asserts that "All unbundled network

¹ *In the Matter of Implementation of the Local Competition Provisions in the Telecommunications Act of 1996, Section II(B)(2)d (paras. 117-157), CC Docket No. 96-98, Notice of Proposed Rulemaking, FCC 96-182 (April 19, 1996).*

elements should be priced at TSLRIC [total service long run incremental cost],”² the U.S. Telephone Association opposes using TSLRIC as a ceiling on prices for unbundled elements, as such a ceiling would not allow ILECs to recover their joint and common costs and other embedded costs.³) We believe it would be helpful for the FCC to be informed of the costing and pricing activities currently taking place in Texas. In brief, the PUCT has learned, from its experience implementing a comprehensive long run incremental cost (LRIC) rule, that this type of costing is complex and that the implementation of any LRIC standard will inevitably vary across states. The pricing of LEC services is an exceedingly complex undertaking and does not lend itself to a simple or generic rule. And finally, due to these complexities, state commissions are best equipped to make costing methodology and pricing determinations in their respective states.

II. The Texas Cost Rule

2. The Public Utility Commission of Texas was one of the first state commissions to adopt a uniform long run incremental cost (LRIC) methodology for LEC services. The PUCT adopted its rule in September 1993.⁴ The LRIC rule was adopted primarily for three reasons: (1) the PUCT recognized the need for telecommunications services to better follow economic costing and pricing principles; (2) a standard costing methodology would lessen the possibility for manipulation of cost studies by LECs and promote a consistent basis for review of cost studies; and (3) long run incremental costs provide the appropriate basis for establishing a cost floor to protect against predatory pricing and cross-subsidization.

² *Comments of MCI Telecommunications Corporation*, Table 2, p. 23.

³ *Comments of the United States Telephone Association*, p. 31.

⁴ A copy of Subst. R. 23.91 is provided as an Attachment to these comments.

3. The Texas rule takes a “building blocks” approach to costing network services. This approach is based on the fact that a number of basic network functions (BNFs), in various combinations, are used to provide a wide range of services. A BNF is defined as a discrete network function, which is useful as a stand-alone function or in combination with other functions, for which costs can be identified.⁵ For example, the interoffice originating call setup switching BNF is used to provide local calls, intralata toll calls, and interstate access. Using the building blocks methodology, the unit cost for that BNF will be the same regardless of which service it is used to provide.

4. The rule defines LRIC as the change in the total costs of the company of producing an increment of output in the long run when the company uses least cost technology.⁶ The relevant increment of output is defined as the level of output necessary to satisfy current demand for the service⁷, hence the rule is consistent with definitions of total-service LRICs. Least cost technology is the technology or mix of technologies that would be chosen in the long run as the most economically efficient choice. The choice of technologies, however, shall be: (1) restricted to technologies currently available on the market; (2) consistent with the level of output necessary to satisfy current demand; and (3) consistent with overall network topology and design.⁸

5. The rule requires Tier 1 Class A LECs to perform three types of LRIC studies: (1) basic network function (BNF) studies; (2) service studies; and (3) group of service studies. Currently, 260 BNF and 75 service studies are scheduled as part of the PUCT’s three-year effort

⁵ Texas PUC Subst. R. 23.91(c)(16).

⁶ Texas PUC Subst. R. 23.91(c)(2).

⁷ Texas PUC Subst. R. 23.91(f)(1).

⁸ Texas PUC Subst. R. 23.91(c)(14).

to investigate LEC service costs. Of those scheduled, 201 BNF and 39 service studies have been filed. The number of group of services studies that will be filed is unknown at this time. Groups of services continue to be defined as the LECs gain a better understanding of their common costs. The commission's review of these LRIC studies has been cited as one of the most thorough and consistent reviews of LEC costs undertaken.⁹

III. The Complexity of Long Run Incremental Costing

6. The PUCT believes that the FCC should endorse LRIC as the appropriate cost standard, but should not attempt to determine specific LRIC methodology. Also, the FCC should not seek to impose a specific LRIC-plus-percent pricing standard for LEC services. Even with a set of standard costing principles between states, there are many factors that would affect the performance of cost studies. Between states, these factors would result in the calculation of different LRICs for the same service and produce different magnitudes of common costs as a proportion of total LEC costs. Because the calculation of LRIC and the magnitude of common costs as a proportion of total LEC costs is subject to such variation, a specific LRIC-plus-percent pricing standard could have different cost recovery implications in the different states.

7. Factors that affect the performance of cost studies and the size of common costs as a proportion of total LEC costs include the identification of groups of services and treatment of common costs, variations caused by network topology and design or geographic and demographic characteristics, and the application of cost drivers.

⁹ Copies of Staff's comments on those LRIC studies the Staff has reviewed are available for public inspection in the PUCT's Central Records Division.

Identification of Groups of Services and Treatment of Common Costs

8. One important aspect of the PUCT's cost rule is its treatment of common costs. This is required by the recognition that common costs are more complex than previous costing methodologies contemplated. Earlier costing methodologies determined that a cost was either directly caused by a service or it was a common cost to the firm. Today our understanding of common costs is more sophisticated. The rule defines common costs as costs that are not directly attributable to individual cost objects.

9. There are three types of common costs: general overhead costs, costs common to BNFs, and costs common to services.¹⁰ General overhead costs are costs incurred in operating and managing the company that are not directly attributable to BNFs or services. Costs common to BNFs are costs incurred in the provision of BNFs that can not be attributed to any one BNF individually but only to a category or subcategory of BNFs collectively. Costs common to services are costs incurred in the provision of two or more services that do not vary with changes in the relative proportions of the outputs of those services.

10. To further address the issue of common costs, the rule requires LRIC studies for groups of services. Groups of services are defined by the presence of common costs between services.¹¹ A subset of LEC services may require the use of common equipment or software. However, other LEC services do not require the use of this equipment or software. Therefore, to conclude that the equipment or software cost is a common cost to the firm is incorrect. This equipment or software cost is a "group common cost" for the group made up of that subset of

¹⁰ Texas PUC Subst. R. 23.91(c)(5).

¹¹ Texas PUC Subst. R. 23.91(h)(2).

LEC services. Possible groups of services include: custom calling features, ISDN services, PBX-type services, and CLASS services.

11. For example, there is a capacity cost incurred to provide a unit of the call forwarding BNF. That capacity cost would be identified in the call forwarding BNF LRIC study. There is also a capacity cost incurred to provide the call waiting BNF which would be identified in the call waiting BNF study. There is a single software right-to-use fee which covers call forwarding, call waiting, and other custom calling features. The software right-to-use fee is not identified in either the call forwarding or call waiting BNF LRIC studies. The software right-to-use fee would be identified in the custom calling features group of services LRIC study.

12. There will likely be many layers of costs common to services and hence many layers of group of services studies. For instance, custom calling features and CLASS features may be two distinct groups of services. But custom calling features and CLASS features may themselves share equipment and thus form another group of "switching features."

13. The manner in which states identify the layers of common costs (and their associated group of services LRICs) will have a great impact on the amount of common costs reflected as general overhead common costs. Using the custom calling features example above, three different treatments of common costs can be imagined. One state may allocate the software right-to-use fee common cost among the individual services, so that the common costs are identified as part of each service's LRIC. Another state might take the Texas approach and identify the right-to-use fee in a group of services LRIC. A third may designate the right-to-use fee as a general overhead common cost. Even assuming that the underlying costs to provide the services are the same in

each of the three cases, because of the alternative methods of reporting common costs, a LRIC-plus-percent approach to pricing would produce different cost recovery results.

Network Topology and Design

14. Network topology and design refers to the manner in which the telecommunications network is laid out (placement of central offices, tandem switching points, etc.) and the type of equipment installed (fiber or copper cable, type and size of switch, etc.). Network topology and design are closely related to geographic and demographic characteristics. The size of common costs as a proportion of total LEC costs can vary dramatically by virtue of these factors and, as a result, these factors can have an impact in the calculation of LRIC. For example, the difference between engineered capacity and usable capacity (as represented by a capacity fill factor) will vary from state to state based on geographic and demographic characteristics. Imagine a central office switch that is engineered to provide telecommunications services for 10,000 access lines. If that central office serves approximately 10,000 access lines, most of the costs of that switch will be directly attributable to the provision of services. However, if that switch only serves 2,000 access lines, only a minority of the costs of the switch will be directly attributable to the provision of services and those that are not attributable will be treated as common costs. Following this logic, a densely populated urban state may have a smaller amount of common costs as a proportion of total LEC costs than a sparsely populated rural state. Again, a simplistic LRIC-plus-percent pricing rule would produce different cost recovery results in these states.

Application of Cost Drivers

15. Another reason that the LRIC costing methodology may differ between states is the manner in which cost drivers are applied. A cost driver is a specific condition, under which a BNF is provided, whose change causes significant and systematic changes in the cost of providing a BNF.¹² For example, if the cost of providing a Network Access Channel varies with distance and the size of the serving wire center, then distance and wire center size are cost drivers for that BNF. LRIC studies will have to utilize a graduated scale of cost drivers to clearly demonstrate their effects on BNF costs. The gradation is likely to differ among BNFs.

16. For example, the costs of some switching BNFs may vary dramatically with wire center size, so that small, medium, and large wire center size categories may be described as 0-10,000 access lines, 10,001 - 20,000 access lines and greater than 20,000 access lines. The costs of other switching BNFs may vary in a more gradual fashion, so that small, medium, and large wire center size categories may be described as 0-25,000 access lines, 25,001 - 50,000 access lines and greater than 50,000 access lines.

17. State characteristics will also play a role in determining the scale of gradation for cost drivers. A state with a relatively long average loop length will have a different scale of cost drivers than a state with a relatively short average loop length. The number of gradations required to clearly demonstrate the effect of the cost driver on BNF costs is also likely to differ among states. This is another reason that, while the FCC may want to endorse LRIC as the

¹² Texas PUC Subst. R. 23.91(c)(7).

appropriate cost standard, the specification of costing methodology is best left to individual state jurisdictions.

IV. Pricing Issues

18. The complexities surrounding the costing and pricing of services provided by a multiproduct firm that supplies monopoly and competitive products are not conducive to a LRIC-plus-percent pricing method or simple allocations of common costs to services and groups of services. As has been discussed above, even with a conscientious effort to comply with a standard costing methodology, many factors will cause states to have differing amounts of common costs as a proportion of total LEC costs. Given this consideration, a simplistic LRIC-plus-percent pricing rule would produce different cost recovery results in these states and could have unintended consequences with respect to the cost recovery burden of basic LEC services.

19. The major issue in the pricing of LEC services is the allocation and recovery of common costs. Unfortunately, economics gives us little in the way of guidance to deal with this fundamental aspect of pricing. The literature states that there is no economically correct way to allocate common costs. The literature shows that a profit-maximizing firm, operating solely under a rate of return constraint, would eventually arrive at the oft-cited inverse-elasticity pricing rule or "Ramsey rule" which states that the degree to which the price of a service is greater than the marginal (incremental) cost of the service is inversely proportional to the elasticity of demand for that service. Or more simply, the more inelastic the demand for a service, the greater the contribution to common costs. While Ramsey pricing, under certain conditions, maximizes

consumer surplus, it ignores equity considerations. It is the role of the state commission to balance the tension between efficiency and equity given the specific desires of the state's citizens.

20. A comprehensive pricing policy will require knowledge of the following: (1) the LRICs for individual services and groups of services; (2) identification of the various group common costs; (3) demand characteristics of each service, including quantity demanded and elasticity of demand; (4) the degree of competition a service faces; (5) the difference between long run and embedded costs; (6) and the public policy goals of the state such as promotion of universal service and protection of captive customers. Pricing decisions must be made on a case-by-case basis by the state commission since it has the best knowledge of these interweaving factors in its jurisdiction. In fact, without considering these factors, the only appropriate use of a LRIC is to establish a price floor to prevent predatory pricing and cross-subsidization.

MAY 28, 1996

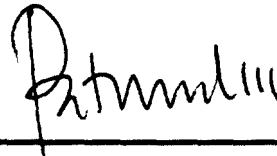
Respectfully submitted,

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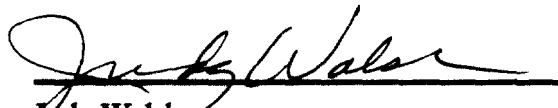
May 28, 1996



Pat Wood, III
Chairman



Robert W. Gee
Commissioner



Judy Walsh
Commissioner

Attachment
PUCT Substantive Rule 23.91

§23.91 Long Run Incremental Cost Methodology for Dominant Certificated Telecommunications Utility (DCTU) Services.

- (a) **Application.** This section shall apply to DCTUs with annual revenues from regulated telecommunications operations in Texas of \$100 million or more for five consecutive years. An incumbent local exchange carrier that is not a Tier 1 local exchange company as of September 1, 1995, at that company's option, may adopt the cost studies approved by the commission for a Tier 1 local exchange company.
- (b) **Purpose.** This section shall be used to determine the long run incremental costs incurred by DCTUs in the provision of telecommunications services. The costs determined in this section shall not be used to determine a company's revenue requirement during a proceeding pursuant the Public Utility Regulatory Act of 1995, §3.210 or §3.211.
- (c) **Definitions.** The following words and terms when used in this section shall have the following meaning unless the context clearly indicates otherwise.
 - (1) **Ancillary Services** — The category of basic network functions (BNFs) (as defined in paragraph (2) of this subsection) that provide for certain activities that either support or otherwise are adjuncts to other BNFs or finished services. This category of BNFs consists of three subcategories of BNFs: Billing and Collection; Measurement; and Operator Services.
 - (A) **Billing and Collection** — The subcategory of BNFs that provide for the function of compiling the information needed for customer billing, preparing the customer bill statement, disbursing the bill and collecting the customer payments.
 - (B) **Measurement** — The subcategory of BNFs that provide the functions of assembling, collating and transmitting end office switch recorded call data (occurrence and duration).
 - (C) **Operator Services** — The subcategory of BNFs that provide for the provision of a number of live or mechanized assistance functions to aid customers in the following ways: obtaining customer telephone number, street address and ZIP code information (directory assistance); providing new telephone numbers or explanatory information to callers who dial numbers which have been changed or disconnected (intercepts); providing assistance to customers in completing operator handled toll or local calls (collect, credit card, third party, station-to-station or person-to-person); checking busy lines to make sure the line is not out of service (busy line verification); and interrupting busy lines (busy line interruption). These Operator Services are provided to end user customers as well as local exchange and interexchange carriers.
 - (2) **Basic network function (BNF)** — A discrete network function, which is useful either as a stand-alone function or in combination with other functions, for which costs can be identified.
 - (3) **Capital costs** — The recurring costs that result from expenditures for plant facilities that are capitalized. The annual capital costs consist of depreciation, cost of money, and income taxes.
 - (4) **Categories of BNFs** — All BNFs shall fall into one of four categories of BNFs. The categories are: Network Access (as defined in paragraph (18) of this subsection); Switching and Switch Functions (as defined in paragraph (20) of this subsection); Dedicated and Switched Transport (as defined in paragraph (10) of this subsection); and Ancillary Services (as defined in paragraph (1) of this subsection).
 - (5) **Common costs** — Costs that are not directly attributable to individual cost objects. For the purposes of this section there are three types of common costs: general overhead costs; costs common to BNFs; and costs common to services.
 - (A) **General overhead costs** — Costs incurred in operating and managing the company that are not directly attributable to BNFs or services.
 - (B) **Costs common to BNFs** — Costs incurred in the provision of BNFs that can not be directly attributed to any one BNF individually but only to a category or subcategory of BNFs collectively.

- (C) **Costs common to services** — Costs incurred in the provision of two or more services that do not vary with changes in the relative proportions of the outputs of those services. Common costs are not directly attributable to any one service individually but only to a group of services collectively. In the event a BNF is used in the provision of two or more services then the volume insensitive cost of the BNF is a cost common to the services that use the BNF. However, if the technological requirements for the provision of one service alter the least cost technology choice for common BNFs or common facilities, then the increase in costs caused by the requirements for more advanced technologies is not a common cost but a cost directly attributable to the service that alters the least cost technology choice.
- (6) **Cost causation principle** — The principle that only those costs that are caused by an activity (such as a network function, service, or group of services) in the long run are directly attributable to that activity. Costs are caused by an activity, in the long run, if the costs are brought into existence as a direct result of the activity.
- (7) **Cost driver** — A specific condition, under which a BNF is provided, whose change causes significant and systematic changes in the cost of providing a BNF. For example, if the cost of providing a Network Access Channel varies with the density and size of a wire center, then density and size are cost drivers for that BNF.
- (8) **Cost of debt** — The rate of interest paid on borrowed money.
- (9) **Cost of money** — The weighted annual cost to the DCTU of the debt and equity capital invested in the company.
- (10) **Dedicated and Switched Transport** — The category of BNFs that provide for dedicated or shared transmission transport between two or more DCTU switching offices or wire centers. This BNF category consists of two subcategories of BNFs: Dedicated Transport and Switched Transport.
- (A) **Dedicated Transport**. — The subcategory of BNFs that provide for full period, bandwidth specific (e.g., DS-0, DS-1, DS-3) interoffice transmission paths between the originating and terminating points of channel connection.
- (11) **Depreciation expenses** — The charges based on the depreciation accrual rates designed to spread the cost recovery of the property over its economic life.
- (12) **Expenses** — Costs incurred in the provision of services that are expensed, rather than capitalized, in accordance with the Uniform System of Accounts applicable to the carrier.
- (13) **Group of services** — A number of separately tariffed services that share significant common costs (as defined in paragraph (5) of this subsection) that are necessary and unique to the provision of those services and are not directly attributable to any one service individually. This term also refers to a situation in which two or more groups of services are part of a larger group of services because of significant common costs that are necessary and unique to the provision of all the services in the group but are not directly attributable to any one group or service individually.
- (14) **Least cost technology** — The technology, or mix of technologies, that would be chosen in the long run as the most economically efficient choice. The choice of least cost technologies, however, shall
- (A) be restricted to technologies that are currently available on the market and for which vendor prices can be obtained;
- (B) be consistent with the level of output necessary to satisfy current demand levels for all services using the BNF in question; and
- (C) be consistent with overall network design and topology requirements.
- (15) **Long run** — A time period long enough to be consistent with the assumption that the company is in the planning stage and all of its inputs are variable and avoidable.
- (16) **Long run incremental cost (LRIC)** — The change in total costs of the company of producing an increment of output in the long run when the company uses least cost technology. The LRIC should exclude any costs that, in the long run, are not brought into existence as a direct result of the increment of output.
- (17) **Measure of unit cost** — The measure of usage used to calculate unit cost for a particular BNF (for example, a minute of use of a switching function, or a quarter mile of a DS-1 Network Access Channel). The measure of unit costs may be multidimensional; for example, it may have both time

and distance components. The measure of unit cost chosen for a BNF shall correspond to the basis upon which the costs of that BNF are incurred.

- (18) **Network Access** — The category of BNFs that accommodate access to other network functions provided by DCTUs. Access is accomplished by transmission paths between customers and DCTU wire centers. This category consists of three subcategories of BNFs: Network Access Channel; Network Access Channel Connection; and Channel Performance and Other Features and Functions.
 - (A) **Network Access (NA) Channel** — The subcategory of BNFs that provide the transmission path between the point of interface at the customer location and the main distribution frame, or equivalent (e.g., DSX-1, DSX-3), of a DCTU wire center.
 - (B) **Network Access (NA) Channel Connection** — The subcategory of BNFs that provide the interface between the Network Access Channel and the DCTU wire center switching equipment, subsequent dedicated transport equipment (dedicated interoffice circuits), or subsequent channel equipment (dedicated intraoffice circuits).
 - (C) **Channel Performance and Other Features and Functions** — The subcategory of BNFs that provide the channel functions associated with transmission or service type (e.g., analog, digital, coin, ISDN), bandwidth conversion, signaling, multiplexing, amplification, and channel performance.
 - (19) **Significant** — For the purposes of this section, the qualifying term significant is used to refer to instances in which costs or changes affect total study results by at least five percent. This general guideline for when costs or changes are significant may be relaxed by considering the cumulative effect of either including or excluding costs or changes from a study.
 - (20) **Subcategories of BNFs** — Groupings of closely related BNFs in a category of BNFs.
 - (21) **Switching and Switch Functions** — The category of BNFs that provide for switched access between two or more Network Access Channels or between Network Access Channels and other BNFs, such as interoffice transport. This function is accomplished through the establishment of a temporary transmission path between Network Access Channels in the same switching office; between a Network Access Channel and the interoffice facilities that interconnect switching offices; or between a Network Access Channel and other BNFs. This BNF category shall cover the first point of switching for a customer. This BNF category consists of three subcategories of BNFs: Interoffice Switching; Intraoffice Switching; and Switching Features.
 - (A) **Interoffice Switching** — The subcategory of BNFs that provide for: switching between Network Access Channels and Switched Transport facilities which are connected to different wire centers; and switching between Network Access Channels and Switched Transport facilities when a tandem switch is used as the first point of interface to the DCTU switched network (e.g., connection of facilities from an interexchange carrier's point of network interface).
 - (B) **Intraoffice Switching** — The subcategory of BNFs that provide for switching between two or more Network Access Channels within the same wire center.
 - (22) **Unit cost** — A cost per unit of output calculated by dividing the total long run incremental cost of production by the total number of units.
 - (23) **Volume sensitive costs** — The costs of providing a BNF that vary with the volume of output of the services that use the BNF.
 - (24) **Volume insensitive costs** — The costs of providing a BNF that do not vary with the volume of output of the services that use the BNF.
- (d) **General principles.**
- (1) Underlying the construction and application of this section is the recognition that the DCTU network consists of a finite number of BNFs that, when bundled in various combinations, can be used to deliver and market a vast variety of telecommunications services. Therefore, the determination of the cost of a service and the costs of a group of services under this section shall involve the identification and costing of BNFs.

- (2) The LRIC studies that the DCTU is required to file under this section shall assume that the company is operating in the long run and employs least cost technologies, as those terms are defined in subsection (c) of this section.
 - (3) In order to obtain accurate LRIC study results, the DCTU shall avoid the use of embedded cost data; expense items and capital costs shall reflect long run incremental costs and the DCTU shall justify any instance in which embedded cost data are used. Further, the fact that the costs determined under this section may differ from the company's embedded costs as determined during proceedings under the Public Utility Regulatory Act of 1995, §3.210 or §3.211, should in no way cause the company to attribute any of this cost discrepancy to LRIC studies for BNFs, services, or groups of services.
 - (4) The appropriate methods for service pricing and recovery of the revenue requirement will be developed in the rulemaking proceeding mandated under subsection (p) of this section.
 - (5) When a BNF is used in the provision of two or more services then the volume insensitive cost of the BNF is a cost common to the services (as defined in subsection (c)(5)(C) of this section) that use the BNF.
 - (6) When services share significant common costs (as defined in subsection (c)(5)(C) of this section), none of the common costs shall be included in the LRIC studies for the services individually; instead, the company shall identify which services share the common costs and attribute the cost recovery responsibility of these costs to the group of services collectively. Specifically, the individual LRIC studies for residential and business basic local exchange service, as these services are tariffed on the effective date of this section, shall exclude any volume insensitive costs associated with the use of the Network Access Channel Basic Level (as defined in subsection (e)(1)(A) of this section) and Network Access Channel Connection Basic Level (as defined in subsection (e)(2)(A) of this section).
 - (7) When two or more groups of services share common costs, none of the common costs shall be included in the LRIC studies for groups individually; instead, the company shall identify which groups share the common costs and assign the common cost recovery responsibility of these costs to these groups collectively.
 - (8) Nothing in this section is intended to either endorse or reject the DCTU's current rate and tariff structures.
- (e) **Identification of Basic Network Functions.** The DCTU shall identify for each subcategory of BNFs the relevant and separately identifiable BNFs. The determination of the appropriate degree of aggregation of network components, functions, or activities into separately identifiable BNFs shall be consistent with the principles described in subsection (d) of this section. Furthermore, in choosing BNFs, the DCTU shall seek to minimize the number of network components, functions, or activities that are not included in BNFs. In addition to BNFs the company identifies under this subsection, the company shall identify for each subcategory of BNFs the following prescribed BNFs:
- (1) **Required BNFs for subcategory Network Access (NA) Channel:**
 - (A) **NA Channel Basic Level:** A transmission path which provides less than 1.544 Mbps digital capability. This includes 300 to 3,000 Hz analog voice service.
 - (B) **NA Channel DS-1 Level:** A transmission path which has 1.544 MBPS digital capability.
 - (C) **NA Channel DS-3 Level:** A transmission path which has 45 MBPS digital capability.
 - (2) **Required BNFs for subcategory NA Channel Connection:**
 - (A) **NA Channel Connection Basic Level:** An interface for channels which provide less than 1.544 Mbps digital capability. This includes the interface for 300 - 3,000 Hz analog voice service which is the basic interface for most voice grade services such as: basic local residential and local business service, PBX trunks, Centrex-type access lines and voice grade dedicated transport service. In addition, this category includes the interface for four frequency bandwidths provided for audio channels such as: 200 to 3,500 Hz, 100 to 5,000 Hz, 50 to 8,000 Hz and 50 to 15,000 Hz. Also included in this BNF are the interfaces for low speed data transmission at speeds of 2.4, 4.8, 9.6, 56 Kbps and all other speeds below the T-1 rate of 1.544 Mbps. This interface is for narrowband service.

- (B) **NA Channel Connection DS-1 Level:** An interface for 1.544 MBPS digital transmission channels. This interface connects high capacity wideband transmission channels which operate in a full duplex, time division (digital) multiplexing mode.
- (C) **NA Channel Connection DS-3 Level:** An interface for 45 MBPS digital transmission channels. This interface connects broadband transmission channels which operate in full duplex, time division (digital) multiplexing mode.
- (3) **Required BNFs for subcategory Channel Performance and Other Features and Functions:**
 - (A) **Standard signaling and transmission level capabilities.** Signaling and transmission level capabilities suitable for a wide variety of network services and applications associated with the BNF NA Channel Basic Level, as defined in paragraph (1)(A) of this subsection.
 - (B) **Nonstandard signaling and transmission level capabilities and other features.** Signaling and transmission level capabilities and other features and functions, other than those defined in subparagraph (A) of this paragraph, such as high voltage protection, multiplexing, and bridging. The company is encouraged to disaggregate this BNF into smaller BNFs that capture the variety of features and functions available to customers.
- (4) **Required BNFs for subcategory Interoffice Switching: Interoffice Switching.** The type of switching that provides for: switching between Network Access Channels and Switched Transport facilities which are connected to different wire centers; and switching between Network Access Channels and Switched Transport facilities when a tandem switch is used as the first point of interface to the switched network (e.g., connection of facilities from an interexchange carrier's point of network interface).
- (5) **Required BNFs for subcategory Intraoffice Switching: Intraoffice Switching.** Switching between two or more Network Access Channels served from the same wire center.
- (6) **Required BNFs for subcategory Switching Features:**
 - (A) **Hunting Arrangements.** An optional function available to customers with multiple local exchange access lines in service.
 - (B) **Custom Calling Features.** Various optional features which provide added calling convenience.
 - (C) **Central Office Automatic Call Distribution.** The provision of call distribution as an integrated function of certain electronic central offices equipped to provide this capability. This function permits an equal distribution of a large volume of incoming calls to predesignated groups of answering positions, referred to as agent positions.
 - (D) **Central Office Based PBX-Type Functions.** A business communications system furnished from stored program control central offices that provides the equivalent of customer premises PBX services through the use of central office hardware and software as well as through network access facilities from the central office to the customer premises. Included in this BNF shall be only hardware specific to this type of service, processor or memory usage involved in special features for this type of service, and any software or software right to use fees associated with this type of service. This BNF should exclude any network functions that are already identified as other BNFs.
- (7) **Required BNFs for subcategory Dedicated Transport:**
 - (A) **Dedicated Transport Termination.** An interface which provides for the transmission conversions (e.g., multiplexing) required between channel connection and dedicated transport facilities.
 - (B) **Dedicated Transport Facility.** The full period, bandwidth specific (e.g., DS-0, DS-1, and DS-3), interoffice transmission paths established between two points of dedicated transport termination.
- (8) **Required BNFs for subcategory Switched Transport:**
 - (A) **Switched Transport Termination.** An interface which provides for the transmission conversion (e.g., multiplexing) required between the switching function and switched transport facilities.
 - (B) **Switched Transport Facility.** The temporary interoffice transmission paths established between two points of switched transport termination.

- (C) **Switched Transport Tandem Switching.** The intermediate points of switching used as an economic surrogate to direct routing of interoffice facilities in the provision of switched transport.
- (9) **Required BNFs for subcategory Billing and Collection: Billing and Collection.** The function of compiling the information needed for customer billing, preparing the customer bill statement, disbursing the bill and collecting the customer payments (this includes any collection activities required for late payment or non-payment of billing amount due).
- (10) **Required BNFs for subcategory Measurement: Measurement.** The function of assembling, collating and transmitting end office switch recorded call data (occurrence and duration).
- (11) **Required BNFs for subcategory Operator Services: Operator Services.** The role of providing a number of live or mechanized assistance functions to aid customers in the following ways: obtaining customer telephone number, street address and ZIP code information (directory assistance); providing new telephone numbers or explanatory information to callers who dial numbers which have been changed or disconnected (intercepts); providing assistance to customers in completing operator handled toll or local calls (collect, credit card, third party, station-to-station or person-to-person); checking busy lines to make sure the line is not out of service (busy line verification); and interrupting busy lines (busy line interruption). These Operator Services are provided to end user customers as well as local exchange and interexchange carriers.
- (f) **LRIC studies for individual BNFs.**
 The DCTU shall perform a LRIC study for each of the BNFs identified under subsection (e) of this section. The company shall perform the LRIC studies consistent with the principles described in subsection (d) of this section. Additionally, the company shall use the following instructions in determining the LRIC for individual BNFs.
- (1) **Relevant increment of output.** For the purposes of this subsection, the relevant increment of output, as that term is used in subsection (c)(16) of this section, shall be the level of output necessary to satisfy total current demand levels for all services using the BNF in question. Adjustments to total service output may be made to reflect the presence of new services for which demand levels can demonstrably be anticipated to increase significantly over the course of six months.
- (2) **Relating expenses to BNFs.** The company shall avoid the use of embedded cost data and shall determine expenses consistent with the principles of long run incremental costing.
- (A) **Common expenses.** Common expenses that are not directly attributable, using the cost causation principle, to the BNF shall be excluded.
- (B) **Nonrecurring expenses.** The expenses of nonrecurring activities shall be separately identified.
- (C) **Taxes.** Any tax expenses not directly attributable, using the cost causation principle, shall be excluded from the LRIC study for individual BNFs. Specifically, taxes associated with the provision of services that use more than one BNF shall not be included in the BNF LRICs.
- (3) **Least cost technology.** LRIC studies shall assume the use of least cost technology. The choice of least cost technologies, however, shall:
- (A) be restricted to technologies that are currently available on the market and for which vendor prices can be obtained;
- (B) be consistent with the level of output necessary to satisfy current demand levels for all services using the BNF in question; and
- (C) be consistent with overall network design and topology requirements.
- (4) **Network topology.** LRIC studies shall use the existing or planned network topology.
- (5) **Cost of money.** When the company uses the most recent commission approved rate of return for the company, as that term is used in §23.21(c)(1) of this title (relating to Cost of Service) there will be a presumption of reasonableness. The company shall justify the use of any other rate.
- (6) **Rate of depreciation.** When the company uses the most recent commission approved rate of depreciation for the company there will be a presumption of reasonableness. The company shall justify the use of any other rate.

- (7) **Measure of unit cost.** LRIC studies shall identify the appropriate measure of unit cost for a BNF (e.g., minutes of use, access line). The measure of unit cost chosen for a BNF shall correspond to the basis upon which the costs of the BNF are incurred. The measure of unit cost may be multidimensional; for example, it may have both time and distance components. In identifying the appropriate measure of unit cost, the company shall ignore the current rate structure for tariffed services using the BNF.
- (8) **Determination of unit cost.** Using the measure of unit cost identified under paragraph (7) of this subsection, the company shall calculate unit cost for the BNF based on the assumption of full capacity utilization of the BNF, which should allow for any spare capacity due to lumpy investments or technical requirements, such as spare capacity needed for testing. The unit cost shall be calculated based on the volume sensitive costs of the BNF and exclude all costs that are volume insensitive (as those terms are defined in subsections (c)(23)-(24) of this section).
- (9) **Determination of volume insensitive costs.** The company shall calculate the volume insensitive costs (as defined in subsection (c)(24) of this section) for the BNF.
- (10) **Cost drivers.** LRIC studies shall identify and account for all relevant cost drivers. LRIC studies for certain BNFs shall at a minimum account for the cost drivers specified below.
 - (A) **Cost drivers for NA Channel Basic Level, NA Channel DS-1 Level, and NA Channel DS-3 Level.** The LRICs for these BNFs shall systematically account for variations in costs caused by variations in
 - (i) the density of a wire center;
 - (ii) the size of a wire center; and
 - (iii) the distance.
 - (B) **Cost drivers for NA Connection Basic Level, NA Connection DS-1 Level, and NA Connection DS-3 Level.** The LRICs for these BNFs shall systematically account for variations in costs caused by variations in
 - (i) the density of a wire center; and
 - (ii) the size of a wire center.
 - (C) **Cost drivers for Intraoffice Switching and Interoffice Switching.** The LRICs for these BNFs shall systematically account for variations in costs caused by variations in
 - (i) the density of a wire center;
 - (ii) the size of a wire center; and
 - (iii) the time of day.
 - (D) **Cost drivers for Dedicated Transport Facilities and Termination.** The LRICs for these BNFs shall systematically account for variations in costs caused by variations in
 - (i) the size of a wire center; and
 - (ii) the distance.
 - (E) **Cost drivers for Switched Transport Facilities, Termination and Tandem Switching.** The LRICs for these BNFs shall systematically account for variations in costs caused by variations in
 - (i) the size of a wire center;
 - (ii) the distance; and
 - (iii) time of day.
 - (F) **Cost drivers for Measurement.** The LRIC for this BNF shall systematically account for variations in costs caused by variations in
 - (i) the density of a wire center;
 - (ii) the size of a wire center;
 - (iii) the time of day; and
 - (iv) the duration of a call.
 - (G) **Cost drivers for Operator Services.** The LRIC for this BNF shall systematically account for variations in costs caused by variations in the type of operator services calls.
- (g) **LRIC studies for tariffed services.** The DCTU shall perform a LRIC study for each tariffed service, except those services for which a waiver has been granted under the workplan approved under

subsection (m) of this section. Each LRIC study for a tariffed service shall be calculated as the sum of the costs caused by that a service's use of BNFs and any other service specific costs associated with functions not identified as separate BNFs, such as expenses of billing, service specific advertising and marketing, and service specific taxes. Each LRIC study for a tariffed service shall be consistent with the principles described in subsection (d) of this section. Additionally, the company shall use the following instructions in determining the LRIC for individual tariffed services:

- (1) **Mapping of BNFs and costs to tariffed services.** The LRIC study shall identify the BNFs that are used in the provision of the tariffed service; the long run incremental costs for the tariffed service shall include the costs associated with this usage. The costs associated with the service's use of a BNF shall be calculated as the product of the unit cost for the BNF (as determined under subsection (f)(8) of this section) and the demand of the service for that BNF.
 - (2) **Identification of other costs.** The LRIC study for an individual tariffed service shall include all service specific costs (e.g., expenses of billing, marketing, customer service or service specific taxes) related to the provision of the service that are not included in the costs for the BNFs.
 - (3) **Exclusion of common costs.** The LRIC study for an individual tariffed service shall exclude any costs that are common costs (as defined in subsection (c)(5) of this section). Specifically, the individual LRIC studies for residential and business basic local exchange service, as these services are tariffed on the effective date of this section, shall exclude any volume insensitive costs associated with the use of the Network Access Channel Basic Level (as defined in subsection (e)(1)(A) of this section) and Network Access Channel Connection Basic Level (as defined in subsection (e)(2)(A) of this section).
 - (4) **Relevant increment of output.** For the purposes of this subsection, the relevant increment of output, as that term is used in subsection (c)(16) of this section, shall be the level of output necessary to satisfy current demand levels for the service. Adjustments to total service output may be made to reflect the presence of new services for which demand levels can demonstrably be anticipated to increase significantly over the course of six months.
 - (5) **Relating expenses to services.** The company shall avoid the use of embedded cost data and shall determine expenses consistent with the principles of long run incremental costing.
 - (A) **Common expenses.** Common expenses that are not directly attributable, using the cost causation principle, to the service shall be excluded.
 - (B) **Nonrecurring expenses.** The expenses of nonrecurring activities shall be separately identified.
 - (C) **Taxes.** Any tax expenses not directly attributable, using the cost causation principle, shall be excluded from the LRIC study for individual services.
 - (6) **Least cost technology.** LRIC studies shall assume the use of least cost technology. The choice of least cost technologies, however, shall:
 - (A) be restricted to technologies that are currently available on the market and for which vendor prices can be obtained;
 - (B) be consistent with the level of output necessary to satisfy current demand levels for all services using the BNF in question; and
 - (C) be consistent with overall network design and topology requirements.
 - (7) **Network topology.** LRIC studies shall use the existing or planned network topology.
 - (8) **Cost of money.** When the company uses the most recent commission approved rate of return for the company, as that term is used in §23.21(c)(1) of this title (relating to Cost of Service) there will be a presumption of reasonableness. The company shall justify the use of any other rate.
 - (9) **Rate of depreciation.** When the company uses the most recent commission approved rate of depreciation for the company there will be a presumption of reasonableness. The company shall justify the use of any other rate.
- (h) **Identification of BNFs and groups of services that share significant common costs and calculation of such common costs.** The company shall identify all instances in which BNFs and groups of services share significant common costs and calculate such common costs.

- (1) **Costs common to BNFs.** The company shall identify and calculate for each subcategory of BNFs and category of BNFs significant costs that are common to BNFs (as defined in subsection (c)(5)(B) of this section). Costs common to BNFs shall only be identified and calculated at the level of subcategories of BNFs and/or categories of BNFs.
 - (2) **Costs common to groups of services.** The company shall identify and calculate all significant common costs and the groups of services that share those common costs (as defined in subsection (c)(5)(C) of this section).
The calculation of common costs required under paragraphs (1)-(2) of this subsection shall be consistent with the principles described in subsection (d) of this section and the instructions listed below.
 - (3) **Relevant increment of output.** When common costs are computed for BNFs or services, the relevant increment of output, as that term is used in subsection (c)(16) of this section, shall be the level of output necessary to satisfy current demand levels for the BNFs or the services. Adjustments to total service output may be made to reflect the presence of new services for which demand levels can demonstrably be anticipated to increase significantly over the course of six months.
 - (4) **Expenses.** The company shall avoid the use of embedded cost data and shall determine expenses consistent with the principles of long run incremental costing.
 - (A) **Nonrecurring expenses.** The expenses of nonrecurring activities shall be separately identified.
 - (B) **Taxes.** Any tax expenses not directly attributable, using the cost causation principle, shall be excluded from the cost studies for common costs.
 - (5) **Least cost technology.** The studies shall assume the use of least cost technology. The choice of least cost technologies, however, shall:
 - (A) be restricted to technologies that are currently available on the market and for which vendor prices can be obtained;
 - (B) be consistent with the level of output necessary to satisfy current demand levels for the BNFs or services in question; and
 - (C) be consistent with overall network design and topology requirements.
 - (6) **Network topology.** Cost studies shall use the existing or planned network topology.
 - (7) **Cost of money.** When the company uses the most recent commission approved rate of return for the company, as that term is used in §23.21(c)(1) of this title (relating to Cost of Service) there will be a presumption of reasonableness. The company shall justify the use of any other rate.
 - (8) **Rate of depreciation.** When the company uses the most recent commission approved rate of depreciation for the company there will be a presumption of reasonableness. The company shall justify the use of any other rate.
- (i) **LRIC studies for groups of tariffed services that share significant common costs.** The DCTU shall perform a LRIC study for each group of services identified under subsection (h)(2) of this section. Each group LRIC shall be calculated as the sum of the LRICs (as determined under subsection (g) of this section) for the services in the group and the common costs for those services (as identified under subsection (h)(2) of this section). Each LRIC study shall be consistent with the principles described in subsection (d) of this section. Additionally, the company shall use the following instructions in determining the LRIC for groups of services.
- (1) **Relevant increment of output.** When the LRIC is computed for a group of services, the relevant increment of output, as that term is used in subsection (c)(16) of this section, shall be the level of output necessary to satisfy current demand levels for the services in the group. Adjustments to total service output may be made to reflect the presence of new services for which demand levels can demonstrably be anticipated to increase significantly over the course of six months.
 - (2) **Relating expenses to groups of services.** The company shall avoid the use of embedded cost data and shall determine expenses consistent with the principles of long run incremental costing.
 - (A) **Common expenses.** Common expenses that are not directly attributable, using the cost causation principle, to the group of services shall be excluded.